What is claimed is:

1. A method of selecting signals to transfer between a head transponder and tail transponder, the method comprising the acts of:

tuning an applied bit rate window of a head transponder to a predetermined frequency;

receiving a request at the head transponder to change the bit rate window;

at the head transponder, generating a communications signal having a bit rate of the predetermined frequency;

at the head transponder, inserting a command into the communications signal, wherein the command states to establish a new bit rate window;

at the head transponder, transmitting the communications signal to a downstream element; and

at the head transponder, transferring payload of incoming signals having a bit rate within the bit rate window.

2. The method of Claim 1, further comprising the acts of:

receiving the communications signal at the tail transponder;

detecting a change in input bit rate at the tail transponder;

at the tail transponder, generating a response signal having a similar bit rate as the communications signal;

at the tail transponder, inserting a command into the response signal indicating receipt of a command to set a new bit rate window; and

at the tail transponder, transferring to the head transponder a payload of signals having a bit rate within the bit rate window.

3. The method of Claim 1, further comprising the acts of:

at the head transponder, performing bit rate verification on incoming signals; and

at the head transponder, transferring the payload of signals having a bit rate within the new bit rate window.

4. The method of Claim 2, further comprising the acts of:

at the tail transponder, performing bit rate verification on incoming signals; and

at the tail transponder, transferring the payload of signals having a bit rate within the new bit rate window.

5. The method of Claim 1, wherein the signals are transmitted over a passive optical network (PON), which is a communication fabric comprising optical fiber connected in a tree topology.

6. The method of Claim 1, wherein the signals are transmitted over a passive optical network (PON), which is a communication fabric comprising optical fiber connected in a star topology.

7. The method of Claim 1, further comprising performing FEC encoding on incoming signals at the head transponder.

8. The method of Claim 1, further comprising performing FEC decoding on incoming signals at the head transponder.

9. The method of Claim 2, further comprising performing FEC encoding on incoming signals at the tail transponder.

10. The method of Claim 2, further comprising performing FEC decoding on incoming signals at the tail transponder.

11. The method of Claim 1, further comprising the acts of:

performing bit rate verification on the incoming signals at the head transponder; and

at the head transponder, transferring the payload of signals having a bit rate within the new bit rate window.

12. The method of Claim 2, further comprising the acts of:

performing bit rate verification on the incoming signals at the tail transponder; and

at the tail transponder, transferring the payload of signals having a bit rate within the new bit rate window.